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EUROPEAN PINE SHOOT MOTH SURVEYS IN OREGON AND WASHINGTON - 1964

by

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SUMMARY

Three types of surveys were made this year--eradication surveys in Spokane, Washington, and Portland, Oregon, general detection surveys in other communities in Oregon and Washington and partial detection surveys in the containment zone. The containment zone extends from Olympia, Washington, northward to the Canadian border and from the Cascade summit westward to the west foothills of the Olympic mountains and north to the Strait of Juan de Fuca. It includes Whatcom, Island, Skagit, Snohomish, King, San Juan, Mason, and parts of Jefferson, Thurston, Grays Harbor, and Pierce and Clallam Counties. Within the containment zone, eradication is impractical. Control is recommended to reduce shoot moth populations. For the third successive year, no infestations were found in Spokane. This area is now considered free of European pine shoot moth. In Portland, 14 infested trees were found and destroyed before moth flight. No infested trees were found in the 41 communities in Washington, outside the containment zone, and 63 towns in Oregon that were surveyed. Infestations were found at several towns in the containment zone previously thought to be uninfested. Lodgepole pine stands at several places were checked as was the ponderosa pine around Spokane, but no European pine shoot moth infestations were found in the ponderosa pine or lodgepole pine stands. These stands will be kept under surveillance for several years to detect any outbreak of the shoot moth.

Spokane Eradication Survey

The 1964 resurvey of the Spokane area was made from May 1 to May 27. It was administered and carried out by the Washington State Department of Natural Resources, with technical advice provided by the U. S. Forest Service. Survey costs were divided equally between Department of Natural Resources and the U. S. Forest Service. This year's results are as follows:

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Summary of Spokane European Pine Shoot Moth Survey

(May 1 to May 29, 1964)

Man days	425	
Trees examined	26,496	
Collections made	16	
Residential properties checked	43,886	
Business properties checked	2,301	
Nurseries and sales outlets checked	215	
Shoot moth-infested trees found	0	
Native pines examined	754	at 44 plots
Collections made	44	
Shoot moth-infested trees found	0	
Cost	$12,190	

Negative survey results for three successive years indicate that the original eradication project in 1961 was successful. Spokane County should now be removed from the list of quarantined counties in Washington.

Sample plots were established in ponderosa pine stands at 44 locations in and near Spokane to detect any escapement that might have occurred. No European pine shoot moth infestations were found this year. These plots will be reexamined annually.

Spot checks of some older and newer landscape plantings in the Spokane area should be continued for the next few years. Also, annual reexaminations of the plots in native pine stands should be continued. Continued surveillance of nurseries and sales outlets in the Spokane area can do much to prevent another outbreak of European pine shoot moth in the Spokane Valley.

Portland Eradication Survey

This was the fourth year in the continuing battle to eradicate the European pine shoot moth. This year's survey of the Portland, Oregon area was made April 6 to June 19. The Oregon State Forestry Department organized and administered the project. Oregon State Department of Agriculture personnel again served as crew leaders in the survey. The U. S. Forest Service financed one-half the project cost and provided the technical assistance.

Survey coverage priorities were established as follows:

Priority	Pines examined on
1	Mile square around 1963 infestations.
2	Mile square around all infestations since 1960.
3	Residential areas with heavy pine density as determined by previous surveys.
4	Low density pine areas and towns outside Portland.

Thirteen infested trees were found on residential properties in one area in southeast Portland. The other infested tree was about 1½ miles east in a City park.

For the past two years all infested trees were found in Portland within a one-mile square area in a southeast section. Some of the recent infestations occurred on larger trees that had not been checked closely enough during earlier surveys. These findings point out the fact that light shoot moth populations are difficult to detect, particularly on large ornamental pines. Removal and destruction of all pines within a 500-foot radius of any of the infested trees would do much to eliminate this center of shoot moth infestation.

The summary of the Portland survey data follows:

Summary of Portland European Pine Shoot Moth Survey
(April 6 to June 19, 1964)

Man days	484
Trees examined	46,538
Collections made	61
Residential properties checked	23,101
Business properties checked	1,448
Shoot moth infested trees found	14
Nurseries and sales outlets checked	69
Trees examined	172,808
Cost	$13,327

Statewide Surveys

The regional surveys of selected communities outside the containment zone were designed to detect any spread of the moth from the containment zone so that prompt, effective eradication action could be taken. Fortunately no shoot moth infestations were discovered.

Between June 11 and September 4, 1964, U. S. Forest Service crews examined a total of 48,675 ornamental and native pines in 63 communities in Washington outside the containment zone and in 41 communities in Oregon. To complete the survey, 230 man-days were required.

Summary of Regional European Pine Shoot Moth Survey 1/
(June to September 1964)

	Oregon	Washington	Total
Man days	119	111	230
Communities surveyed	41	63	104
Pines examined	26,725	21,950	48,675
Collections made	7	5	12
Shoot moth infested pines	0	0	0
Sales outlets checked	16	22	38
Pine in sales outlets	1,095	1,784	2,879
Project cost (Federal)	$5,740	$8,230	$13,970

1/ Does not include containment zone.

Communities surveyed outside the containment zone in Washington and Oregon by Forest Service crews for European pine shoot moth during the summer of 1964 were as follows:

Washington

Community	No. pines examined	Community	No. pines examined
Aberdeen	736	Odessa	71
Camas	211	Okanogan	49
Cashmere	179	Olympia	1,250
Castle Rock	23	Omak	352
Centralia	408	Oroville	38
Central Park	178	Othello	106
Chehalis	318	Pasco	476 1/
Chelan	139	Pomeroy	50
Chewalah	15	Prosser	101
Clarkston	158	Pullman	1,443 1/
Cle Elum	86	Quincy	119
Colfax	387	Raymond	132
College Place	119	Republic	8
Colville	130	Richland	1,139
Cosmopolis	27	Ritzville	109
Coulee Dam	76	Roslyn	7
Davenport	42	Selah	42
Deer Park	9	Soap Lake	42
Ellensburg	1,172	South Bend	180
Ephrata	358	Tonasket	86
Fords Prairie	44	Toppenish	90
Goldendale	64	Tumwater	275
Grand Coulee	35	Vancouver	4,390 1/
Grandview	196	Waitsburg	56
Granger	16	Walla Walla	1,167
Hoquiam	223	Wapato	24
Lacey	421	Washtucna	9
Leavenworth	167	Wenatchee	1,440 1/
Longview	584	Wilbur	93
McCleary	52	Yakima	1,232 1/
Montesano	107	Zillah	31
Moses Lake	663		
	Total pines examined in Washington		21,950

1/ Only partially surveyed in 1964.

Oregon

Community	No. pines examined	Community	No. pines examined
Albany	570	John Day	46
Arlington	72	Junction City	109
Ashland	662	Madras	78
Astoria	1,013	Medford	1,305
Beaverton	3,061	Milton-Freewater	617
Bend	765	Newport	929
Brookings	199	North Bend	367
Burns	142	Pendleton	1,098
Canyonville	82	Port Orford	448
Clatskanie	51	Prineville	205
Coos Bay	547	Rainier	42
Coquille	108	Redmond	356
Corvallis	1,929	Reedsport	389
Cottage Grove	221	Roseburg	458
Eugene	6,253	St. Helens	222
Florence	283	Scappoose	137
Gold Beach	208	Seaside	711
Grants Pass	234	The Dalles	515
Hermiston	136	Tillamook	162
Hillsboro	891	Warrenton	261
Hood River	843		
	Total pines examined in Oregon		26,725

In both States, State Department of Agriculture nursery inspectors and/or Agricultural Research Service personnel visited all licensed nurseries and examined the pines being grown or offered for sale. All pines imported in Oregon were examined at Salem by nursery inspectors prior to release to the consignee.

Containment Zone Surveys

Soon after discovery of the extent of the European pine shoot moth infestation in the Puget Sound area in Washington, a containment zone was established to prevent the spread of the moth. The zone is comprised of Whatcom, Skagit, Snohomish, King, San Juan, Island, Kitsap, and Mason Counties and parts of Pierce, Thurston, Grays Harbor, Jefferson, and Clallam Counties. Efforts have been made to prevent the spread of the moth from this zone. Movement of pine stock within and from these Counties is done under Federal and State inter- and intra-state quarantine regulations. Voluntary control of shoot moth infestations within the containment zone is encouraged, but no eradication programs have been undertaken. Research is now being planned to determine the feasibility of using biological control measures against the moth in the containment zone.

Again this year Forest Service crews made brief detection surveys within the containment zone. New infestations were found in several additional communities in the zone. Communities within the containment zone known to be infested by the European pine shoot moth are shown below:

Bellevue
Bellingham
Blaine - 1963 1/
Bothel
Bow Lake
Bryn Mawr
Burien
Burlington - 1963 1/
Cedarhurst
Cromwell
Des Moines
Docton
Duwamish
Eastgate
Edmonds
Everett - 1963 1/
Federal Way
Fife
Fircrest
Forest Beach
Foster
Gig Harbor - 1963 1/
Harbor Heights
Kenmore
Kennydale
Kent
Kirkland
Lakewood
Lake Forest Park
Lynden - 1963 1/
Lynwood
Maury Island
Mercer Island
Midway
Mount Vernon - 1961 1/
McMiken Heights
Normandy Park
North City
North Puyallup
Puyallup
Redmond
Renton
Richmond Beach
Richmond Heights
Riverton
Riverton Heights
Ronald
Rosedale
Seahurst
Seattle
Shelton
Sheridon Beach
Sumner
Sunnydale
Suquamish
Tacoma
The Highlands
Tukwila
Vashon Heights
Waterman
White Center
Wollochet
Woodway
Zenith

1/ No European pine shoot moth infestations were found in the surveys after the year shown.

Communities within the containment zone not known to be infested by the European pine shoot moth are shown below:

Adelaide
Alderwood Manor
Algona
Anacortes
Arletta
Arlington
Avondale
Bangor
Belfair
Berrydale
Birch Bay
Black Diamond
Bonney Lake
Bremerton
Brinnon
Buckley
Burton
Campton
Cedar Mt.
Chico
Coal Creek
Coalfield
Cove
Covington
Creosote
Darrington
Dieringer
East Redmond
Echo Lake
Edgewood Park
Eldon
Elliott
Ellisport
Enumclaw
Everson
Ferncliff
Ferndale
Fletcher Bay
Flint
Forks
Fort Lewis
Fortson
Gretchell
Haddock
Hazel
Hollywood
Hoodsport
Indianola
Issaquah
Joyce
Keyport
Kingston
Lake City
Lake Stevens
Lakota
Lakewood
La View
Lisabeula
Lopez Island
Louise Lake
Lowell
Luena Beach
Magnolia Beach
Manchester
Manitou Beach
Manzanita
Maplewood
Marysville
McCord Air Base
Milton
Mirror Lake
Monroe
Monte Vista
Mount Lake Terrace
Mount Vernon
Mukilteo
Newcastle
North Bend
Oak Harbor
Pacific
Parkland
Pinehurst
Pleasant Beach
Portage
Port Angeles
Port Blakely
Port Gamble
Port Madison
Port Ludlow
Port Townsend
Potlatch
Poulsbo
Quilcene
Redondo
Renton
Retsil
Rollingbay
San Juan Island
Sappho
Seabold
Sedro Woolley
Sequim
Shawnee
Silvania
Silverdale
Snohomish
Snoqualmie
Snoqualmie Falls
South Beach
South Gate
Steilacoom
Sumas
Suquamish
Tahlequah
Tillicum
Tyee Park
Union
Vashon
Vashon Center
Venice
Vinland
Warren
Webb Center
Whidbey Island
Winslow
Woodbury
Woodinville
Woodmont Beach

Moth spread between communities within the containment zone has been relatively slow and mostly through movement of infested pines. The rate of spread in infested areas is rapid, occurring through moth flight and movement of infested pines. More intensive detection surveys will be made in the containment zone in 1965.

Rate of Spread Survey, Mercer Island, Washington

The purpose of this survey is to follow the spread of the European pine shoot moth on ornamental pines in a heavily infested residential area within the containment zone in western Washington.

During August 1964, a 5-man Forest Service crew examined all ornamental pines on a mile and one-half square area on the northeastern tip of Mercer Island, a residential area about two miles east of Seattle. All pines were mapped to show old shoot moth attacks, new shoot moth attacks, and uninfested trees. The survey data for 1963 and 1964 are summarized below:

Item	Year of Survey			
	1963		1964	
	No.	Pct.	No.	Pct.
Old attacks	909	47.4	1,075	42.3
New attacks	166	8.7	468	18.4
Infested pines	1,075	56.1	1,543	60.7
Uninfested pines	846	43.9	999	39.3
Total pines	1,921	100.0	2,542	100.0

About 18 percent of the pines on the area were first attacked in 1964 while 42 percent were infested during the 1963 or earlier moth flights. During the 1964 summer, homeowners planted an additional 621 pines in this area, making the direct comparison of the 1963 and 1964 attack data less meaningful.

The rate of spread survey on Mercer Island and at other nearby communities will be continued for several years. Particular attention will be given new pine plantings in the newer residential and commercial areas.